

WHAT IS CLAIMED IS:

- 1 1. A multimedia contents converting apparatus
- 2 configured to convert input multimedia contents to
- 3 be displayed on a screen with a predetermined size,
- 4 including text media and media other than the text
- 5 media, into output multimedia contents to be displayed
- 6 on a screen with a size smaller than said predetermined
- 7 size, said apparatus comprising:
- 8 a text display time calculation processing unit
- 9 for calculating a display time period of text media
- 10 to be included in said output multimedia contents,
- 11 on the basis of conversion instruction information;
- 12 a spatiotemporal layout information setting
- 13 processing unit for setting spatiotemporal layout
- 14 information on said output multimedia contents on
- 15 the basis of said conversion instruction information;
- 16 and
- 17 a contents conversion processing unit for
- 18 converting said input multimedia contents into said
- 19 output multimedia contents on the basis of said
- 20 spatiotemporal layout information,
- 21 said spatiotemporal layout information setting
- 22 processing unit setting a display time period of said
- 23 text media included in said spatiotemporal layout
- 24 information, on the basis of said display time period
- 25 of said text media calculated in said text display
- 26 time calculation processing unit, and setting a

27 playing time period of said media other than said
28 text media included in said spatiotemporal layout
29 information, on the basis of said display time period
30 of said text media set as said spatiotemporal layout
31 information.

1 2. A multimedia contents converting apparatus
2 according to claim 1, wherein said text display time
3 calculation processing unit calculates said display
4 time period of said text media to be included in said
5 output multimedia contents, on the basis of text
6 information obtained from said input multimedia
7 contents and text display form information inputted
8 as said conversion instruction information.

1 3. A multimedia contents converting apparatus
2 according to claim 1, wherein said spatiotemporal
3 layout information setting processing unit sets a
4 playing time period of said media other than said
5 text media included in said spatiotemporal layout
6 information to coincide with said display time period
7 of said text media set as said spatiotemporal layout
8 information.

1 4. A multimedia contents converting apparatus
2 according to claim 1, further comprising:
3 a segment playing time setting unit for setting
4 a playing time period of each of segments of said

5 media other than said text media to be included in
6 said output multimedia contents;
7 a total playing time calculation unit for
8 calculating a total playing time period of all said
9 segments of said media other than said text media
10 on the basis of said playing time period of each of
11 said segments of said media other than said text media
12 set in said segment playing time setting unit; and
13 a repeat count setting processing unit for
14 setting a repeat count of said media other than said
15 text media on the basis of said display time period
16 of said text media calculated in said text display
17 time calculation processing unit and said total
18 playing time period of all said segments of said media
19 other than said text media,
20 said contents conversion processing unit making
21 a conversion of said media other than said text media
22 included in said input multimedia contents on the
23 basis of said repeat count set in said repeat count
24 setting processing unit.

1 5. A multimedia contents converting apparatus
2 according to claim 4, wherein said repeat count
3 setting processing unit sets, as said repeat count,
4 n (n : integer) which satisfies a condition that,
5 when said repeat count of said media other than said
6 text media is taken as n , said playing time period

7 of said media other than said text media becomes
8 shorter than said display time period of said text
9 media and, when said repeat count of said media other
10 than said text media is taken as $n + 1$, said playing
11 time period of said media other than said text media
12 becomes longer than said display time period of said
13 text media.

1 6. A multimedia contents converting apparatus
2 according to claim 5, wherein said spatiotemporal
3 layout information setting processing unit is made
4 such that, after the completion of n repeated playings,
5 said media other than said text media is frozen until
6 a display end time of said text media.

1 7. A multimedia contents converting apparatus
2 according to claim 4, wherein said repeat count
3 setting processing unit sets, as said repeat count,
4 $n + 1$ (n : integer) which satisfies a condition that,
5 when said repeat count of said media other than said
6 text media is taken as n , said playing time period
7 of said media other than said text media becomes
8 shorter than said display time period of said text
9 media and, when said repeat count of said media other
10 than said text media is taken as $n + 1$, said playing
11 time period of said media other than said text media
12 becomes longer than said display time period of said
13 text media.

1 8. A multimedia contents converting method of
2 converting input multimedia contents to be displayed
3 on a screen with a predetermined size, including text
4 media and media other than the text media, into output
5 multimedia contents to be displayed on a screen with
6 a size smaller than said predetermined size, said
7 method comprising:
8 a text display time calculation processing step
9 of calculating a display time period of said text
10 media to be included in said output multimedia
11 contents, on the basis of conversion instruction
12 information;
13 a spatiotemporal layout information setting
14 processing step of setting spatiotemporal layout
15 information on said output multimedia contents on
16 the basis of said conversion instruction information;
17 and
18 a contents conversion processing step of
19 converting said input multimedia contents into said
20 output multimedia contents on the basis of said
21 spatiotemporal layout information,
22 in said spatiotemporal layout information
23 setting processing step, a display time period of
24 said text media included in said spatiotemporal layout
25 information is set on the basis of said display time
26 period of said text media calculated in said text

27 display time calculation processing step and a playing
28 time period of said media other than said text media
29 included in said spatiotemporal layout information
30 is set on the basis of said display time period of
31 said text media set as said spatiotemporal layout
32 information.

1 9. A multimedia contents converting method
2 according to claim 8, wherein, in said text display
3 time calculation processing step, said display time
4 period of said text media to be included in said output
5 multimedia contents is calculated on the basis of
6 text information obtained from said input multimedia
7 contents and text display form information inputted
8 as said conversion instruction information.

1 10. A multimedia contents converting method
2 according to claim 8, wherein, in said spatiotemporal
3 layout information setting processing step, a playing
4 time period of said media other than said text media
5 included in said spatiotemporal layout information
6 is set to coincide with said display time period of
7 said text media set as said spatiotemporal layout
8 information.

1 11. A multimedia contents converting method
2 according to claim 8, further comprising:

3 a segment playing time setting step of setting
4 a playing time period of each of segments of said
5 media other than said text media to be included in
6 said output multimedia contents;

7 a total playing time calculation step of
8 calculating a total playing time period of all said
9 segments of said media other than said text media
10 on the basis of said playing time period of each of
11 said segments of said media other than said text media
12 set in said segment playing time setting step; and

13 a repeat count setting processing step of setting
14 a repeat count of said media other than said text
15 media on the basis of said display time period of
16 said text media calculated in said text display time
17 calculation processing step and said total playing
18 time period of all said segments of said media other
19 than said text media,

20 in said contents conversion processing step, a
21 conversion of said media other than said text media
22 included in said input multimedia contents is made
23 on the basis of said repeat count set in said repeat
24 count setting processing unit.

1 12. A computer-readable storage medium storing a
2 multimedia contents conversion program which makes
3 a computer conduct the processing of converting input
4 multimedia contents to be displayed on a screen with

5 a predetermined size, including text media and media
6 other than the text media, into output multimedia
7 contents to be displayed on a screen with a size smaller
8 than said predetermined size, the conversion
9 processing comprising:

10 a text display time calculation processing step
11 of calculating a display time period of said text
12 media included in said output multimedia contents
13 on the basis of conversion instruction information;

14 a spatiotemporal layout information setting
15 processing step of setting spatiotemporal layout
16 information on said output multimedia contents on
17 the basis of said conversion instruction information;
18 and

19 a contents conversion processing step of
20 converting said input multimedia contents into said
21 output multimedia contents on the basis of said
22 spatiotemporal layout information,

23 in said spatiotemporal layout information
24 setting processing step, a display time period of
25 said text media included in said spatiotemporal layout
26 information is set on the basis of said display time
27 period of said text media calculated in said text
28 display time calculation processing step and a playing
29 time period of said media other than said text media
30 included in said spatiotemporal layout information
31 is set on the basis of said display time period of

32 said text media set as the spatiotemporal layout
33 information.

1 13. A computer-readable storage medium storing a
2 multimedia contents conversion program according to
3 claim 12, wherein, in said text display time
4 calculation processing step, said program makes said
5 computer conduct the processing of calculating said
6 display time period of said text media to be included
7 in said output multimedia contents on the basis of
8 text information obtained from said input multimedia
9 contents and text display form information inputted
10 as said conversion instruction information.

1 14. A computer-readable storage medium storing a
2 multimedia contents conversion program according to
3 claim 12, wherein, in said spatiotemporal layout
4 information setting processing step, said program
5 makes said computer conduct the processing of setting
6 a playing time period of said media other than said
7 text media included in said spatiotemporal layout
8 information to coincide with said display time period
9 of said text media set as said spatiotemporal layout
10 information.

1 15. A computer-readable storage medium storing a
2 multimedia contents conversion program according to

3 claim 12, wherein said program makes said computer
4 conduct:

5 a segment playing time setting step of setting
6 a playing time period of each of segments of said
7 media other than said text media to be included in
8 said output multimedia contents;

9 a total playing time calculation step of
10 calculating a total playing time period of all said
11 segments of said media other than said text media
12 on the basis of said playing time period of each of
13 said segments of said media other than said text media
14 set in said segment playing time setting step; and

15 a repeat count setting processing step of setting
16 a repeat count of said media other than said text
17 media on the basis of said display time period of
18 said text media calculated in said text display time
19 calculation processing step and said total playing
20 time period of all said segments of said media other
21 than said text media, and

22 in said contents conversion processing step,
23 said program makes said computer conduct the
24 processing of making a conversion of said media other
25 than said text media included in said input multimedia
26 contents on the basis of said repeat count set in
27 said repeat count setting processing unit.

1 16. A multimedia contents conversion program which
2 makes a computer conduct the processing of converting
3 input multimedia contents to be displayed on a screen
4 with a predetermined size, including text media and
5 media other than said text media, into output
6 multimedia contents to be displayed on a screen
7 smaller than said predetermined size, said program
8 making said computer function as each of said
9 processing units constituting the multimedia
10 contents converting apparatus according to claim 1.

1 17. A multimedia contents converting apparatus
2 comprising:
3 a control unit for conducting the processing of
4 converting input multimedia contents to be displayed
5 on a screen with a predetermined size, including text
6 media and media other than the text media, into output
7 multimedia contents to be displayed on a screen with
8 a size smaller than said predetermined size, on the
9 basis of conversion instruction information; and
10 a storage unit for storing a spatiotemporal
11 layout information table,
12 said control unit conducts the processing
13 including:
14 a step of acquiring information on
15 predetermined text media from said input multimedia
16 contents on the basis of said conversion instruction

17 information and reading out said spatiotemporal
18 layout information table from said storage unit to
19 temporarily produce said spatiotemporal layout
20 information table by setting said information on the
21 predetermined text media therein;

22 a step of acquiring data of said
23 predetermined text data from said input multimedia
24 contents through the use of said information on said
25 predetermined text media set in said spatiotemporal
26 layout information table;

27 a step of calculating a display time period
28 of text media included in said output multimedia
29 contents on the basis of said data on said
30 predetermined text media, setting a display time
31 period of said text media in said spatiotemporal
32 layout information table on the basis of the
33 calculated display time period of said text media
34 and setting a playing time period of said media other
35 than said text media included in said output
36 multimedia contents in said spatiotemporal layout
37 information table on the basis of said display time
38 period of said text data set in said spatiotemporal
39 layout information table to bring said spatiotemporal
40 layout information table to completion; and

41 a step of converting said input multimedia
42 contents into said output multimedia contents on the

43 basis of said spatiotemporal layout information table
44 brought to completion.